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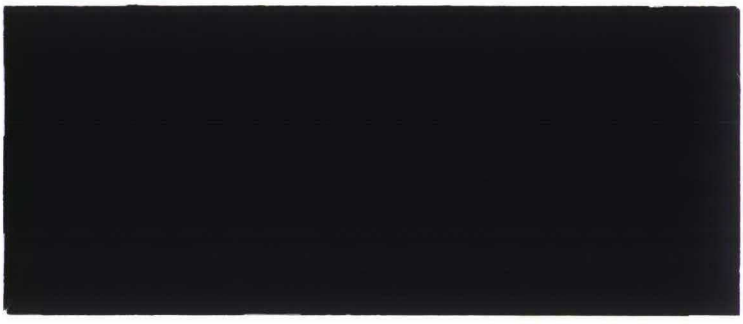

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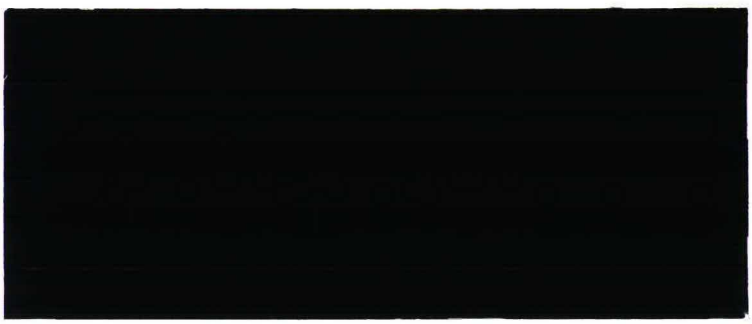

SOCIETAL BARGAINING AND STABILITY

Marco Wilke

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SOCIETAL BARGAINING AND STABILITY[1]

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1 Introduction

A number of capitalist democracies are characterized by 'macro-corporatism'. For the moment leaving the extensive political science debate on the nature of corporatism aside, this system has at least two outstanding attributes: centralized bargaining between organized capitalists and workers on important socio-economic topics and various forms of interaction between state agents and representatives of these groups. This paper elaborates the prospects and results of centralized bargaining and the related role of the state.

Two different 'wage regimes' are introduced in this paper. It is assumed that workers and capitalists are organized in trade unions resp. employers' organizations which operate on several levels in the economy. In most capitalist democracies, part of the labour force is member of a sectoral or craft trade union. Firms are commonly organized in sectoral employers' organizations. Especially in countries characterized by

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1 In preparing this paper, I collaborated closely with Jörg Glombowski. Earlier versions were discussed with Joop de Kort, Marinus Verhagen and members of 'Fachbereich politische Ökonomie, Darmstadt' as well as the Dutch Union for Political Economy. All remarks and assistance are gratefully acknowledged.

corporatism, these organizations have nation-wide representatives: federations of both trade unions and of employers' organizations. One wage regime, the 'market wage regime', is characterized by bargaining on the wage rate at, or below, the sectoral level. Since there are no boundaries that obstruct intersectoral mobility of workers, it is assumed that the employment rate is most important in determining the growth of wages. Relations between workers and capitalists are of non-cooperative nature: given a certain employment rate, workers try to maximize the growth of wages. The second wage regime, 'the corporatist wage regime', is distinguished from the previous one by centralized bargaining between nation-wide representatives of organized labour and capital. Bargaining of this kind comprises a certain elimination of the labour market as determinant of the growth of wages. The goal of resulting agreements is to increase the pay-offs for both capitalists and workers.

This approach is the result of a critical notion of a set of models reviewed by Glombowski and Wilke (1988) as 'game theoretic models of class struggle'. Besides many crucial changes compared with these models, this approach emphasizes the important role of the state in establishing compromises between capitalists and workers. Therefore, it is concluded that this approach is better suited for capturing some aspects of the political system 'corporatism'.

In section 2, the basic model is introduced, containing a 'market wage regime'. For a given profit tax rate, a steady state growth path of the economy is derived. Section 3 provides an analysis of the likelihood capitalists and workers will try to switch to the 'corporatist wage regime', or alternatively, start to bargain centrally on wages. In section 4, an attempt is made to indicate the possible content(s) of the 'corporatist wage regime'. As will be made clear, the capitalist state plays an important role here. The very essence of the 'corporatist wage regime' contains its seeds for its breakdown. This is discussed in section 5. Section 6 discusses parts of the implications of the model.

2 The 'market-wage' regime

The basic model, containing the 'market wage' regime, strongly resembles that of Goodwin (1967), and subsequent elaborations of it (see e.g. Glombowski, Krüger (1987), (1988)).

In the model, income (Y) is linearly determined by the capital stock (K), related to each other by a constant capital coefficient ($1/\kappa$):

$$K(t)/Y(t)=1/\kappa \qquad (1)$$

The growth of the capital stock (ΔK)[2] results from net investment (I),

$$\Delta K(t)=I(t) \qquad (2)$$

Net investment is a function of after-tax profits ($(1-\tau)P$),

$$I(t)=\alpha(t)[1-\tau(t)]P(t) \qquad (3)$$

where α denotes the accumulation share of after-tax profits. 'τ' is the profit tax rate which is discretely set by the government. Profits that are not accumulated are consumed. However, α is not considered to be a strategic variable for the whole class. It is assumed that the investment decision is an autonomous firm decision. Simplifying from many factors, it is assumed that the accumulation share does not fluctuate[3]:

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2 The following notational conventions are used: the growth of variable $x(t)$ $(=x(t+1)-x(t))$ is noted by $\Delta x(t)$, and the growth rate of $x(t)$ $(=[x(t+1)-x(t)]/x(t))$ by $\hat{x}(t)$.

3 In an earlier version of this model, I formulated a dependency of the accumulation share on the profit rate (ρ), where $\partial\alpha/\partial\rho>0$. Since this effect made no qualitative difference with respect to the current formulation, I did not introduce this dependency here.

$$\alpha(t)=\sigma \qquad 0\leq\sigma\leq 1 \qquad (4)$$

All wages are consumed: therefore investment is bounded by the amount of after-tax profits. The wage share is defined as the fraction of total wages in income,

$$\lambda(t)=[w(t)L(t)]/Y(t) \qquad (5)$$

$w(t)$ indicates the average real wage in the economy at time t, and $L(t)$ labour demand (employment). Labour demand is determined by income (net production) and labour productivity (y),

$$L(t)=Y(t)/y(t) \qquad (6)$$

Technological change is captured by the value of the growth rate of labour productivity ($\hat{y}(t)$) which is assumed to depend on the wage share. A rising wage share implies higher labour unit costs. Consequently, capitalists will, on average, invest in relatively labour saving technology. This leads to a rising growth rate of labour productivity. A specific functional form that reflects this relation is:

$$\hat{y}(t)=m_1+m_2\lambda(t) \qquad m_2\geq 0, \qquad (7)$$

In the 'market-wage regime' wages are set at decentralized level. The employment rate is supposed to be the only endogenous variable that determines the growth rate of wages. Alternatively, wage formation results from pure labour market forces, which leads to the label 'market wage regime'. However, capitalist democracies are characterized by very large differences of the structure of labour markets and even more importantly, relative power of capitalists and workers. Such differences are reflected in the wage level, or/and in the adjustment parameters of wage growth to employment levels. Formally this amounts to:

$$\hat{w}(t)=-a_1+a_2\beta(t) \qquad a_1,a_2\geq 0 \qquad (8)$$

The employment rate (β) is defined as the fraction of demand (L) and supply (A) for labour,

$$\beta(t)=L(t)/A(t) \tag{9}$$

Labour supply is assumed to increase constantly,

$$\hat{A}(t)=n \qquad n\geq 0 \tag{10}$$

The last relations of the basic model define (before-tax) profits,

$$P(t)=[1-\lambda(t)]Y(t) \tag{11}$$

the profit rate,

$$\rho(t)=P(t)/K(t) \tag{12}$$

and state expenditures (G) which are consumed, and financed totally out of profit-taxes, implying a balanced budget condition,

$$G(t)=\tau(t)[1-\lambda(t)]Y(t) \tag{13}$$

It is important to note that although government expenditures are financed out of profit taxes, it does not imply that capitalists 'pay' for all these expenditures. Since capitalists determine investment and thereby the employment rate they are able to 'shift' eventual tax increases to workers via the employment - wage growth relation of equation (8). As will be made clear in the equilibrium values of wage share and employment rate (equations (16) and (17)), an increase in the tax rate τ implies a lower steady state wage share (see footnote 4).

The model discussed so far contains fourteen unknown variables. One of these, the profit tax rate, is set discretely by the incumbent political parties (government). The government is thus allowed to manipulate the economy.

This system can be reduced to two difference equations. First, an expression for $\hat{\beta}(t)$ is derived, using resp. (9), (10), (6), (7), (1), (2), (3) and (11):

$$\hat{\beta}(t)=\{1+\sigma\kappa[1-\tau(t)][1-\lambda(t)]\}/\{[m_1+m_2\lambda(t)+1][1+n]\} - 1 \qquad (14)$$

Then, the growth rate of the wage share is expressed in terms of $\beta(t)$ and $\lambda(t)$, using resp. (5), (6), (7), and (8)

$$\hat{\lambda}(t)=\{-a_1+a_2\beta(t)+1\}/\{m_1+m_2\lambda(t)+1\} - 1 \qquad (15)$$

This system of two non-linear difference equations can be examined on the existence of possible equilibrium values, and whether the system converges towards these equilibrium values, i.e. if for some reason the economy is out of equilibrium; will it adjust itself to its equilibrium values or not?

The equilibrium values of this system for a given $\tau(t)=\tau^*$, leading to $\hat{\lambda}(t)=\hat{\beta}(t)=0$ are:

$$\lambda^*=\{1-[1+m_1][1+n]+\sigma\kappa[1-\tau^*]\}/\{m_2(1+n)+\sigma\kappa[1-\tau^*]\} \qquad (16)$$

and,

$$\beta^*=[m_1+m_2\lambda^*+a_1]/a_2 \qquad (17)$$

In the appendix, the stability of this system is analyzed. Although no easy to interpret results are found, it is possible to find relevant parameter values for which stability conditions are met. One necessary (but not sufficient!) condition is that $m_2>0$: if the growth of labour productivity does not depend on the wage share, the system does not converge to its equilibrium values.

Although it is possible for the equilibrium employment rate to equal 1, it will be clear that no real existing capitalist society has an inherent 'drive' towards full employment. However the logic of this model 'forbids' an equilibrium full employment rate too, since otherwise the growth rate of wages would be maximally equal to the growth rate of

labour productivity (if $\beta^{max}=\beta^*=1$, $a_2=m_1+m_2\lambda^*+a_1$ and $\hat{w}^{max}=m_1+m_2\lambda^*$), and consequently the wage-share would never be able to increase above its steady state level.

Given the structure of the steady state in the market wage regime, the government can only influence the employment rate via the mechanism of the wage-share indexed rise of labour productivity. It can be shown that $\partial\lambda^*/\partial\tau < 0$[4], thus a lower profit tax rate results in a higher wage share and consequently a higher employment rate: if $m_2>0$! But even if there is no feedback from the wage share to labour productivity growth ($m_2=0$), the government may still be able to have a temporary positive impact on the employment rate if it lowers profit taxes, but this effect fades away in time, since a rising employment rate leads to a lower profit share (via eq. (8)).

In the structure of the 'market wage regime' the very powerful position of firms becomes clear. A remarkable inference of the formula of the steady state wage share (16) is that workers have no influence on this outcome. As capitalists determine the volume of investment and its characteristics (labour productivity growth) they own the most important power resources of this economy. If workers become more powerful in this regime (reflected e.g. in a lower a_1), they will only temporarily benefit from the consequences.

3 Regime switch

If $\beta^*<1$, both capitalists and workers are capable of improving their pay-offs, compared with the steady state resulting from the market-wage regime. Suppose that workers try to maximize total wages (λY) in the steady state. Maximum output (Y^{max}) in each period is restricted by available labour power: $Y^{max}(t)=y(t)A(t)$. Real output in each period is then $Y(t)=y(t)\beta(t)A(t)$. In a steady state, $y(t)$ and $A(t)$

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4 This result is only possible if $1-(1+m_1+m_2)(1+n) < 0$.

develop independently from other variables in the model. Therefore, workers might be assumed to maximize (if they can) their wage share in the steady state: $\lambda\beta$. Analogously, capitalists try to maximize profits which leads according to similar reasoning to a maximization of $(1-\lambda)\beta$. In other words, β indicates some sort of utilization level of the economy, of which both actors try to maximize their part.

<insert figure 1>

In figure 1, a λ,β plane is drawn. Point A denotes the market-wage regime steady state (λ^*,β^*). Two curves are drawn, intersecting at A. The curve BB' indicates an 'iso-utility curve' for workers along which $\lambda\beta=\lambda^*\beta^*$ holds. All points lying in the north-east direction of BB' contain combinations of λ,β implying pay-off improvements for workers. CC' represents its counterpart: the 'iso-utility curve' for capitalists, $(1-\lambda)\beta=(1-\lambda^*)\beta^*$. Points north-west of the latter curve represent improvements for capitalists. Consequently, both actors prefer the area enclosed by ABC above the market-wage regime steady-state equilibrium (λ^*,β^*). The asymmetry in the figure, CC' being steeper then BB', is merely arbitrary; in the figure, λ^* is supposed to be larger then 0,5.

The important idea behind this part of the analysis is that for both actors the market-wage regime steady state is not optimal, and consequently Pareto-optimal improvements are possible, provided that the market-wage regime, reflecting pure market power of both classes, does not lead to full employment. However, it is one thing to argue that Pareto-improvements are possible, and another to assert that such improvements will be made. In this approach, a probability is formulated which reflects the possibility that a wage-regime switch takes place.

At this part of the analysis, I assume that a "regime-switch" may only take place if both actors recognize the existence of a steady state combination of both unemployment (β^*) and a specific income distribution (λ^*). If the economy follows a cyclical pattern (e.g. a Goodwin growth cyle), there hardly seems to be an incentive for the actors to change important institutional characteristics of the economy. For example, if the employment rate rises above the steady state level (in a market wage regime), sectoral trade unions have no direct incentive to change

institutions of labour relations, since their market power is relatively high: they are able to press for a growth rate of wages that exceeds the growth rate of labour productivity (see eq. (8)). Vice versa this argument counts for capitalists.

But, as is argued in the appendix, it is certainly possible for the economy marked by the 'market wage regime' to converge to the steady state values of (λ^*,β^*). The following procedure is proposed to establish whether the steady state is in force. Formally, one can express $d(t)$ as the weighted difference between both the actual employment rate $\beta(t)$ and its steady state value β^*, and the actual wage share $\lambda(t)$ and λ^*:

$$d(t)=\{[\beta(t)-\beta^*]^2+[\lambda(t)-\lambda^*]^2\}^{0.5} \qquad (18)$$

If d is very small, one may conclude that a steady state is in force[5], thus if

$$d(t) < \varepsilon \qquad \varepsilon\in\mathbb{R}^+ \qquad (19)$$

then $t=T_1$, and a switch from T_1 onwards to a centralized-wage regime may take place. The probability that a regime switch from market-wage formation to centralized bargaining takes place is notated by z_1. z_1 is a function of time and a 'maximum probability of regime switch' (p_1^*):

$$z_1=f(t,p_1^*)= \begin{cases} 0 & \text{for } t<T_1 \\ [1-(t+1-T_1)^{-1}]p_1^* & \text{for } t\geq T_1 \end{cases} \qquad (20)$$

Where $0<p_1^*\leq 1$.

Function z_1 captures a 'learning process'. As time proceeds, the chances of central agreements on wage developments increase. Normally in

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5 To conclude this, the model has to be stable (i.e. converge to its equilibrium values), otherwise it may be just as well possible that in one period $\lambda(t)$ and $\beta(t)$ equal their equilibrium values and in the next period $t+1$ differ from these values.

economic theory, subjects immediately come to an agreement if this would benefit them both. But why do actors not immediately step to agreements that benefit both of them? Centralized federations of trade unions and employers' organizations must convince their members of the long run benefits of central agreements, if there are any. Different organizations of both classes or sections within the same organizations do not always have exactly the same interests. The steady state employment level and wage share are macro economic averages; between different sectors there may be large differences; in some sectors the labour market may be tighter: the trade union(s) in these sectors will be reluctant to leave bargaining to a higher level. In other sectors labour may be relatively abundant. Capitalists in this sector will hardly ask for aid from their central organizations. Consequently it will take time for centralized organizations to convince their members of changing labour market institutions in order to improve the class interests.

The state plays an important role in the establishment of a corporatist regime by offering parties a suitable platform for negotiations. Besides such a platform, the state may provide the actors with information about economic indicators. If both actors trust this information, it will help them to reach agreements and to persuade their members. The ideological attitude of the incumbent political party(ies) is therefore important in order to assess the chance of a regime switch. A party attached to free market ideology will hardly commit itself to provide support to central agreements between capitalists and workers. Contrarily, a political party that wants to pursue 'social consensus' or something akin will try to raise the chance for a regime switch to a corporatist wage regime[6]. Other, more pragmatic considerations for governments to support such a regime switch will be treated in section 6.

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6 In model simulations, it may be conceived that political parties have some impact on the maximum probability of regime switch (p_1^*).

4 Centralized bargaining, the state and the corporatist wage regime

It seems unlikely that central representants of the capitalist class (i.e. the federation of employers' organizations) are able to manipulate or bargain with the amount and type of investments. In capitalist democracies, even in those which are characterized by strong centralized federations of employers' and labour organizations, the amount and type of investment is an autonomous firm decision[7]. Consequently, in my view, the accumulation share is not subject to centralized bargaining. Even if employers' organizations promise that investment will relatively increase, trade unions will not believe this as they know the autonomy of capitalist firms concerning investment decisions.

In the present model this means that equations (4) and (7) remain unchanged in case of a 'regime switch' to corporatism or, alternatively, they are not subject to agreements. It may be possible for individual firms to appreciate centralized agreements on wages and react on this by investing larger part of their profits; "business confidence" increases if corporatism is implemented. However, for the moment, I think this type of argument is not well founded, since one may just as well reverse reasons of "business confidence"[8].

Consequently, centralized agreements only concern the wage rate, or rather, the growth rate of wages. But both central organizations know the reactions of individual firms on changes in the economic environment: equation (3) expresses that firms invest a certain part of their after-tax profits. As is clarified by (14), the employment rate

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7 According to most literature on industrial relations (see e.g. Gladstone and Windmuller (1984)), centralized employers' organizations seem to have three main functions:
1 To represent interests of employers towards the state
2 To support their members with juridical and economic advice
3 To engage in collective bargaining on labour conditions

8 Firms know the goal of centralized wage bargaining: increasing the employment rate. Therefore, they may fear consequent possible wage rises of workers.

can only increase if the wage share falls below its steady state level, or if the government adjusts its tax rate. Equation (7) reinforces this effect: a lower wage share implies relatively cheap labour power and therefore induces the introduction of relatively labour intensive investments leading to lower productivity growth and rising employment.

There are a number of possibilities to describe the corporatist wage regime, i.e. the centrally made agreements on the development of wages. However, an important criterium for a realistic and viable path to a corporatist 'steady state' must be simplicity, since complicated computations cannot be expected to be monitored and, if necessary, to be adjusted. Another criterium for viable agreements must be their feasibility: the development of wages must lead to economic meaningful values. A third criterium is their attractiveness; the resulting values of λ and β should remain in the area ABC of figure 1.

A possible baragining outcome contains a temporary wage moderation $(\hat{w}(t)<[-a_1+a_2\beta^*]$ for a number of periods. After this period of wage moderation, the growth of wages again should equal the (market-) equilibrium growth of labour productivity. All features and parameters of the model of section 2 remain unchanged except for equation (8): 'market'-wage formation is replaced by the above-mentioned 'rules'. A numerical example of such an agreement is provided in table 1:

<insert table 1>

The stability of this outcome results from the endogenous growth rate of labour productivity: during the periods of wage moderation, the wage share falls leading to $\hat{y}(t) < m$. If $\hat{w}(t)$ again equals m, $\lambda(t)$ rises which helps to stop a continuously growing employment rate. To summarize, such an agreement contains three variables: the number of periods workers have to moderate their wage claims, the 'rate of moderation' (the relative wage growth during the period of moderation compared with the wage growth in a steady state market wage regime), and the agreement that the growth rate of wages will not extend the growth rate of wages implied by the steady state of the market wage regime.

A second form of feasible agreements requires the introduction of a third actor in this setting, the government. The disadvantage of the

previous agreement is the unilateral moderation from the part of organized workers. Since investment cannot be part of the 'deal' in a capitalist economy, workers must moderate their wage claims, without the security of individual capitalists sticking to their previous investment behaviour. If capitalists decide on average to decrease relative investment, workers have moderated their wage claims without reaping the expected benefits, to say the least. But in this second type of agreement, the state may temporarily reduce its profit taxes, if centralized workers and capitalists have agreed to change their wage setting behaviour: wages will not increase faster than the steady state growth rate of labour productivity, implying a constant wage share. Formally this means that in the model, equation (8) changes into: $\hat{w}(t)=-a_1+a_2\beta^*$. Given unchanged investment behaviour of capitalists, the consequent rise in investment leads to a higher employment rate. For a numerical example, see table 2.

<insert table 2>

The major advantage of the latter agreement is that the interests of workers are not harmed (compared with the market wage regime), even if capitalists would adjust their investment behaviour. The state looses some of its tax benefits, but this may be offset as resulting from a higher output level of the economy. The chances of breakdown of the corporatist compromise seem smaller than in case of the first agreement. These chances are the subject of the next section. Aspects of both type of agreements may be combined. Resulting outcomes of tripartite bargaining may include both a temporary wage moderation as tax reductions. As can be expected, employment rate effects are stronger here: see table 3.

<insert table 3>

5 The instability of centralized bargaining

The eventual outcome of a process of centralized bargaining is not stable itself. Only if centralized actors control their members, i.e. their rank and file, sufficiently and the latter do not deviate from the central wage agreements, this 'steady state' holds. But there is now a 'tight' labour market, in the sense that decentralized organizations of workers are able to press for wage increases above the growth of labour productivity. In fact, individual workers, or small sectoral or craft trade unions face a collective action problem here. For the whole working class, the outcome of centralized bargaining means an improvement compared with the results of 'the market' (recall the analysis of section 3 and figure 1). But decentralized units of the working class face the incentive of increasing their wages above centrally made agreements and neglecting subsequently presumably small effects on the overall employment rate. This may even be stimulated by individual firms which try to compete for relatively scarce labour power. If a large number of 'free rides' occurs, centralized bargaining will presumably not continue, since its effects are overruled. Consequently, a reverse regime switch to the market wage regime may take place here.

The probability of such a switch depends on several arguments. Without pretending to be exhaustive, I will enumerate a few of those arguments. First, employment plays an important role. Employment rates above the market-wage regime steady state level provide chances for wage increases above productivity growth. Following this line of reasoning, the higher the employment rate, the larger is the probability of a switch taking place. But the employment rate plays another role. If centralized trade unions agree with the representatives of capitalist firms on a moderate wage development in order to level up the employment rate, they are, eventually, only capable to discipline their members if the employment rate indeed rises. If it does not, for example if capitalists on average invest less, the probability of a breakdown of centralized bargaining will increase.

A second variable influencing the likelihood of the breakdown of the corporatist wage regime is the wage share. A rise (fall) of the wage share compared with its market-wage regime level will decrease (increase) the probability of a regime switch. If the growth rate of

wages actually lags behind the growth rate of labour productivity (i.e. a fall of the wage share) the pressure on corporatist agreements will rise.

The third variable is time. If the other instability arguments longer prevail, if will be more difficult for the centralized actors to control their members.

In order to formalize the preceding arguments to make computer simulations of the model possible, I use a specific form that reflects the arguments above. The probability of the breakdown of centralized bargaining is defined as z_2.

$$z_2 = \begin{cases} 0 & \text{for } t<T_2 \\ \{0.5-0.5(t+1-T_2)^{-1}+\eta_1[|\beta(t)-(\beta^*+\eta_2)|]\}\{1-\eta_3[\lambda(t)-\lambda^*]\}p_2^* & \text{for } t\geq T_2 \end{cases} \quad (22)$$

where $0\leq\eta_2\leq(1-\beta^*)$, $0\leq p_2^*\leq 1$ and T_2 is the period of the corporatist wage regime becoming effective. In the numerical examples of table 1 to 3, the development of z_2 is given. It is important to warrant for the arbitrariness of both equation (22) as for all of the parameters used. In equation (22), $(t+1-T_2)^{-1}$ represents the factor 'time'. η_1 measures the sensitiveness of z_2 to departures of $\beta(t)$ from an employment rate $\beta^*+\eta_2$. η_3 represents the influence on z_2 of variations of the wage share. Of course, the absolute values of z_2 in tables 1 to 3 provide little information. Only their relative values do shed some light on the probability of failure a specific outcome of the corporatist wage regime has.

It is also possible to introduce an 'intermediate' regime of wage formation here. In this regime, the corporatist wage regime is broken for one period by trade unions using their market power fully. Then, it may be conceived that the centralized organization of the employers checks whether cooperating to the corporatist wage regime still benefits its members, or alternatively whether relinguishing centralized bargaining on wages is perceived to be a better strategy. In the structure of the model, capitalists consider whether their class is worse off compared with the pay offs the steady state in the market wage regime offers, thus whether $(1-\lambda(t))\beta(t)<(1-\lambda^*)\beta^*$. If this condition is

fulfilled, it has no use for capitalists to engage in centralized wage agreements anymore, and the corporatist wage regime is left altogether. If not the federation of employers' organizations may give the corporatist wage regime another chance.

6 Concluding remarks and additional comments

As formulated in the paper, both wage regimes carry their own seeds for instability. In the model, the market wage regime leads to a steady state which forms, in game theoretic terminology, a Nash equilibrium; given the structure of the model, neither of the actors are capable of unilateral strategy change in order to improve their pay-offs. But the resulting steady state is pareto-inferior; which implies that both actors have a stake in changing the structure of wage-bargaining. The possible result of bargaining, the corporatist wage regime, may be pareto-superior compared to the market wage regime, but it is not a Nash-equilibrium: given the high employment rate, decentralized units of workers and capitalists may drive the growth rate of wages up.

An important feature of this approach is the dual notion of class organization. Workers are organized in trade unions (sectoral or craft) and the trade unions are on their turn organized in a nation-wide federation. Interests of the central federation and its joined trade unions may collude but may also diverge. Divergence of interests and problems of collective action may lead to the breakdown of a corporatist wage regime. The organization of capitalists is often authorized by its members to negotiate on wage (and some other general labour conditions). But the members (firms) do not give up their autonomy with respect to investment decisions. The type and amount of investments is therefore not subject to centralized agreements between capitalists and workers. The seemingly powerlessness of the centralized representatives of capitalists is in fact their strength ("we cannot command more

investment efforts of our members, even if we want to")[9]. Still, the outcomes of corporatist wage regimes are not without danger for capitalists since a switch to the market wage regime means a temporary relative low profit share.

As was made clear in the paper, interference by the state may raise the possibility of institutionalising a corporatist wage regime and may lower the chance of its breakdown, although it is neither assumed that the state is able to enforce the corporatist wage regime nor to prohibit a breakdown. This reflects the idea that corporatism is a tripartite affair in its essence. In this last section, I want to make some remarks on the arguments behind the likelihood of such state behaviour in order to prevent critical comments on supposed functional reasoning.

The capitalist state consists of different actors. All these actors have their own interests or they represent interests of the 'non-state' society. Resulting policies will reflect a weighted mix of interests. The most powerful actors in the state probably are able to have the largest impact on the policy of the state, but usually it is very difficult (if possible at all) to perceive precisely which combination of interests is determinate for the resultance of a certain policy. To keep this discussion in reasonable limits, I restrict myself to comment on the interests of political parties in persuing or stimulating centralized agreements between capitalists and workers.

Usually, the main actors in the state are presumed to be politicians, or rather political parties. Besides ideological convictions, parties are interested in winning elections, whether they are incumbent or not. Prosperous economic developments will help the incumbent political party (ies) to win elections (and vice versa). The

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9 See, in this context, the classical analysis on bargaining power and strategy range of Thomas Schelling (1956). His main point is that effective bargaining results from committing yourself to a strategy and thereby forcing the opponent to give in. The real strategic aspect of bargaining is the problem of committing oneself trustfully. The most extreme way of strategic commitment seems to be a total lack of control on the strategic variable: which then stops being subject to bargaining.

employment rate seems to be an important economic variable influencing electoral choice (see e.g. Frey, Schneider (1988), Hibbs (1987)). If stimulating a corporatist wage regime will not strongly affect other variables (like inflation, the wage tax rate or governmental expenditures), incumbent political parties are likely to take a positive stance towards this policy.

However, political parties have of course other means to influence the employment rate. Especially conservative parties, attached to free market ideology, will presumably try to weaken working class power by e.g. changing laws on trade union competence ("union bashing"). In this model, changing of the rules could lead to a change of the parameters of equation (8), for example a higher a_1: given a certain employment rate, workers have less possibilities to demand higher wages. This may lead to a higher steady state employment rate in the market wage regime (see (17)). Policies of the Reagan and Thatcher administrations during the last decennium are better described by the latter policy than by trying to promote a corporatist wage regime.

In general, it is important to acknowledge the (not novel!) idea that the state has other means than 'classic' fiscal or monetary policy options to influence to performance of the capitalist economy. Institutions that regulate the functioning of the latter do not come about in a 'stateless' vacuum. As such, this discussion is part of the ongoing debate whether economic policy of the state substantially affects any real economic variable in the (medium-) long run.

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Appendix: The stability of the market wage regime

In this appendix, the stability of the equilibrium values of the wage share (λ) and the employment rate (β), implied by the system of difference equations (14) and (15), is examined. For convenience (14) and (15) are repeated here, slightly rewritten:

$$\beta(t+1) = f(\beta(t),\lambda(t)) = \{1+\sigma\kappa[1-\tau^*][1-\lambda(t)]\}\beta(t)/\{[m_1+m_2\lambda(t)+1][1+n]\}$$

$$\lambda(t+1) = g(\beta(t),\lambda(t)) = \{-a_1+a_2\beta(t)+1\}\lambda(t)/\{m_1+m_2\lambda(t)+1\}$$

The system 1b and 2b consists of two nonlinear difference equations with equilibrium values,

$$\beta^* = \{m_1+m_2\lambda^*+a_1\}/a_2 \quad \text{and}$$
$$\lambda^* = \{1-[1+m_1][1+n]+\sigma\kappa[1-\tau^*]\}/\{m_2(1+n)+\sigma\kappa[1-\tau^*]\}$$

This system has stable equilibrium values (β^*,λ^*), i.e. converges to these equilibrium values, if initial points of reference are close to these equilibrium values and if the characteristic roots of the Jacobian matrix of the system above have moduli less than 1 (see: Sydsæter, K., p. 415).
The Jacobian matrix (M') is:

$$\begin{vmatrix} \partial f(\beta(t),\lambda(t))/\partial\beta(t) & \partial f(\beta(t),\lambda(t))/\partial\lambda(t) \\ \partial g(\beta(t),\lambda(t))/\partial\beta(t) & \partial g(\beta(t),\lambda(t))/\partial\lambda(t) \end{vmatrix} = \begin{vmatrix} A' & B' \\ C' & D' \end{vmatrix}$$

Where,

$$A' = \{1+\sigma\kappa[1-\tau^*][1-\lambda(t)]\}\{[m_1+m_2\lambda(t)+1][1+n]\}^{-1}$$
$$B' = \{-\beta(t)\sigma\kappa(1-\tau^*)\}\{[m_1+m_2\lambda(t)+1][1+n]\}^{-1}-m_2[1+n]\{[m_1+m_2\lambda(t)+1][1+n]\}^{-2}$$
$$C' = a_2\lambda(t)\{m_1+m_2\lambda(t)+1\}^{-1}$$
$$D' = \{-a_1+a_2\beta(t)+1\}\{m_1+m_2\lambda(t)+1\}^{-1}-m_2\lambda(t)\{-a_1+a_2\beta(t)+1\}\{m_1+m_2\lambda(t)+1\}^{-2}$$

For convenience, the following expressions are introduced:

$\mu = [m_1+m_2\lambda(t)+1]$
$\varphi = \sigma\kappa(1-\tau^*)$

Then, in equilibrium,

$$[-a_1+a_2\beta^*+1] = [m_1+m_2\lambda^*+1] = \mu$$

Now, for equilibrium values (β^*,λ^*), A', B', C', D' can be rewritten,

$A = \{1+\varphi[1-\lambda^*]\}\{\mu[1+n]\}^{-1}$
$B = \{-\beta^*\varphi\}\{\mu[1+n]\}^{-1} - m_2[1+n]\{\mu[1+n]\}^{-2}$
$C = a_2\lambda^*\mu^{-1}$
$D = 1 - m_2\lambda^*\mu^{-1}$

It can readily be checked that A, C >0 and B<0. If $(m_1+1)>0$, D>0.
It can be shown that A=1, since,

$$\mu = \{(m_2+m_1+1)\varphi+m_2\}\{m_2(1+n)+\varphi\}^{-1} \quad \Rightarrow$$

$$A = \{[1+\varphi(1-\lambda^*)][m_2(1+n)+\varphi]\}\{[(m_2+m_1+1)\varphi+m_2][1+n]\}^{-1} \quad \Rightarrow$$

$$= \{[m_2(1+n)+\varphi]+\varphi[(m_2+m_1+1)(1+n)-1]\}\{[(m_2+m_1+1)\varphi+m_2][1+n]\}^{-1} \quad \Rightarrow$$

$$= \{m_2+\varphi(m_2+m_1+1)\}\{(m_2+m_1+1)\varphi+m_2\}^{-1} \quad \Rightarrow$$

$$= 1$$

Now, the modulus of the characteristic roots (ζ) of matrix M can be found

$$M = \begin{vmatrix} A & B \\ C & D \end{vmatrix}$$

This can be done by setting

$$|(M-\zeta I)| = 0$$

Which leads to,

$$\zeta^2-(A+D)\zeta+(AD-BC)=0 \quad \Rightarrow$$

$$\zeta = 0.5(A+D) \pm \{[0.5(A+D)]^2-(AD-BC)\}^{0.5}$$

For convenience,

$$a = 0.5(A+D) \qquad \text{and}$$
$$b = \{[0.5(A+D)]^2-(AD-BC)\}$$

If $b<0$, the modulus of ζ $(=a\pm(-b)^{0.5}i)$ equals

$$\{a^2+(-b)\}^{0.5} \quad \Rightarrow$$

$$\{[0.5(A+D)]^2-[0.5(A+D)]^2+(AD-BC)\}^{0.5} \quad \Rightarrow$$

$\{D-BC\}^{0.5}$, since A=1.

Now, the two main conditions for stability can be made:

I $\quad \{D-BC\}^{0.5} < 1$

II $\quad \{[0.5(D+1)]^2-(D-BC)\} < 0$

Ad I)

$$\{D-BC\}^{0.5}<1 \quad \Rightarrow$$
$$\{D-BC\}<1,$$

since for the negative roots of the expression above the condition is always met.

Ad II)

$$[0.5(A+D)]^2-AD+BC < 0 \quad \Rightarrow$$
$$0.25D^2-0.5D+0.25+BC < 0 \quad \Rightarrow$$
$$1-2(-BC)^{0.5}< D < 1+(-BC)^{0.5}$$

Since we consider only economic meaningful values ($m_2 \geq 0$), the relevant area for D is,

$1-2(-BC)^{0.5} < D$

These expressions may be decomposed in the original parameters, but then become large and do not offer very much insight in the structure of the problem. However, it seems that the best way to interpret these results (informally) is that a_2 cannot be too large compared with m_2, which means that if wages movements react relatively fast on changes in the employment rate and labour productivity growth reacts relatively slow on changes in the wage share then the system becomes unstable. A necessary condition for the system to be stable is that $m_2 > 0$. Two numerical examples are given that indicate a (un)stable system.

Example 1

φ=0,16 a_1=0.06 a_2=0.1
n=0.01 m_1=-0.0182 m_2=0.05
These parameter values lead to
μ=1.0218 λ^*=0.8 β^*=0.918
(D-BC) = 0.9878 < 1
$1-2(-BC)^{0.5}$ = 0.75628 < D (=0.9609)

Therefore this system is stable.

Example 2

Now use the same parameter values as in example 1, except for,

a_1=0.9 and a_2=1
This leads to
μ=1.02178 λ^*=0.8 β^*=0.9218

Now, D-BC=1.1101 > 1, therefore the system is unstable

Numerical examples of the corporatist wage regime

The following parameter values are used:

κ=0.5	σ=0.64	m_1=-0.1575	m_2=0.25
τ=0.5	n=0.01	a_1=0.06	a_2=0.1
p_2^*=0.2	η_1=7	η_2=0.02	η_3=5

This parameter structure leads to the equilibrium values:

λ^*=0.749 β^*=0.898

This system is stable, since (see appendix),

φ=0.16	μ=1.0298		
D=0.818	B=-0.371	C=0.0727	BC=-0.027

Thus,

(D-BC) = 0.845 < 1 and,

$1-2(-BC)^{0.5}$ = 0.671 < D.

Table 1: temporary wage moderation

In this example, for t=[1,3], $\hat{w}(t)=0.75(m_1+m_2\lambda^*)$. For t=[4,→>, $w(t)=(m_1+m_2\lambda^*)$.

t	β	λ	z_2
1	0.899	0.749	0.025
2	0.899	0.744	0.077
3	0.9	0.74	0.094
4	0.904	0.736	0.1
5	0.908	0.738	0.097
6	0.912	0.74	0.094
7	0.915	0.742	0.091
8	0.918	0.743	0.09
9	0.92	0.744	0.093
10	0.921	0.745	0.096
25	0.925	0.749	0.106

Table 2, temporary tax reduction

In this example, the $\tau=0.75\tau^*$, during period $t=[1,3]$. For $t=[4,\rightarrow>$, $\tau=\tau^*$.

t	β	λ	z_2
1	0.899	0.749	0.075
2	0.899	0.749	0.075
3	0.907	0.749	0.08
4	0.916	0.749	0.077
5	0.924	0.749	0.089
6	0.924	0.749	0.091
7	0.924	0.749	0.093

Table 3: temporary wage reduction and tax reduction

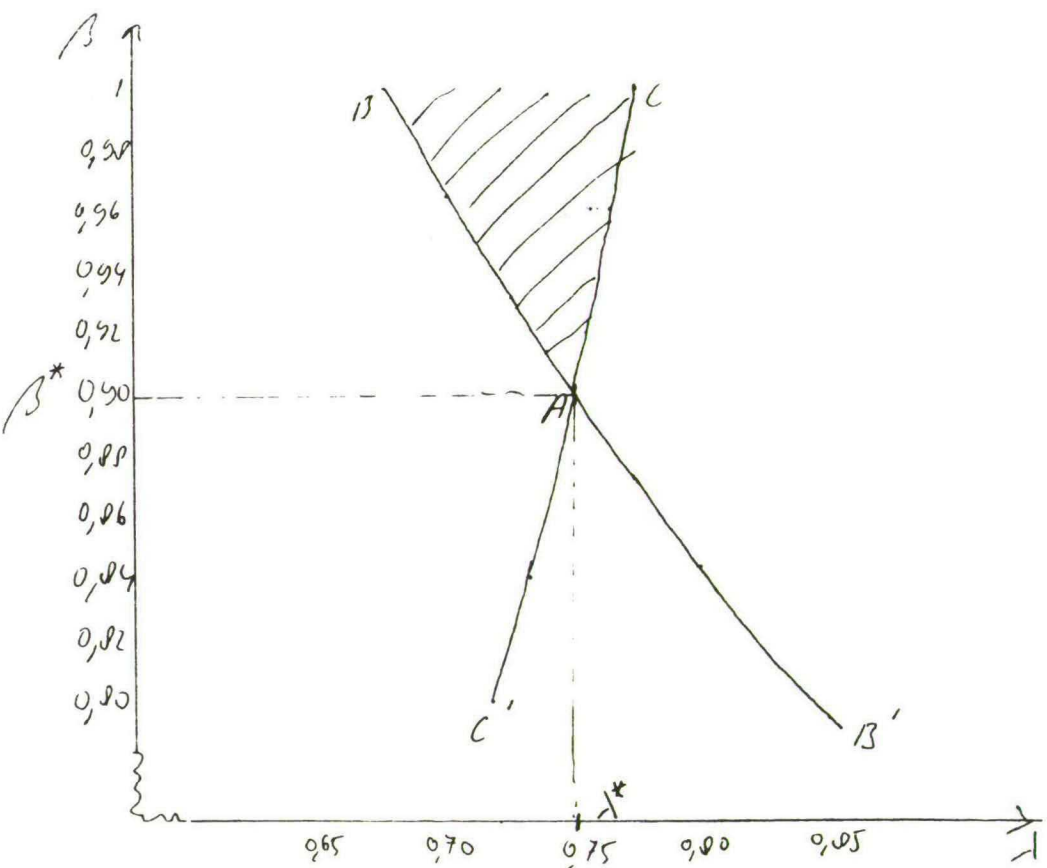
During $t=[1,3]$, $\tau=0.75\tau^*$, and $\hat{w}(t)=0.75(m_1+m_2\lambda^*)$. For $t=[4,\rightarrow>$, $\tau=\tau^*$ and $w(t)=(m_1+m_2\lambda^*)$.

t	β	λ	z_2
1	0.899	0.75	0.025
2	0.899	0.744	0.077
3	0.91	0.74	0.081
4	0.922	0.736	0.086
5	0.936	0.738	0.111
6	0.94	0.74	0.119
7	0.943	0.742	0.125
8	0.946	0.743	0.129
9	0.948	0.744	0.133
10	0.949	0.745	0.136
25	0.953	0.749	0.145

SOCIETAL BARGAINING AND STABILITY

FIGURE 1

PARAMETER VALUES: $m = 0,03$ $\kappa = 0,5$
$n = 0,01$ $\sigma = 0,64$
$a_1 = 0,06$ $\tau = 0,5$
$a_2 = 0,1$ $b = 0$



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